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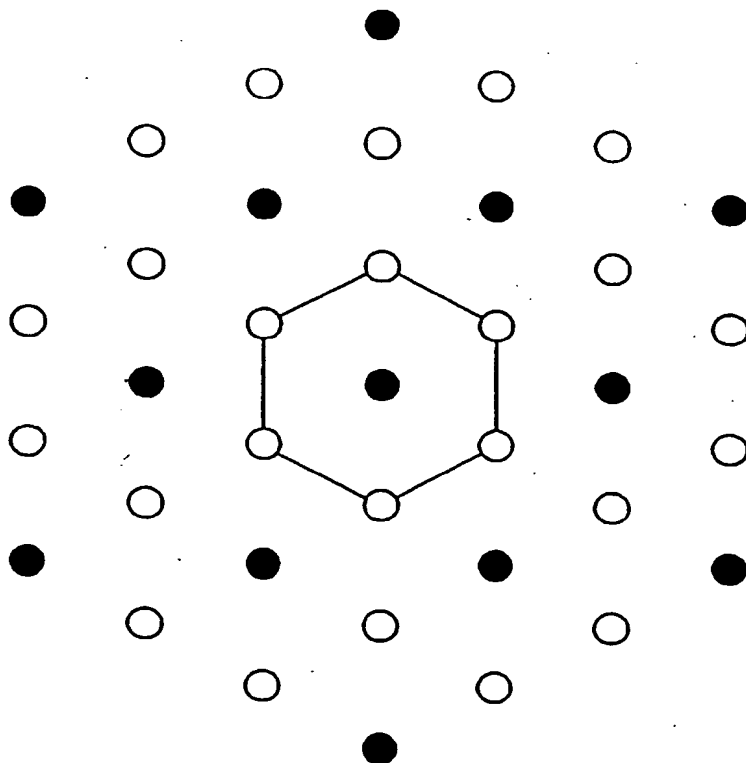
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(54) Title: SPINTRONIC DEVICES AND METHOD FOR INJECTING SPIN-POLARIZED ELECTRICAL CURRENTS INTO SEMI-CONDUCTORS



(57) Abstract: Atomically ordered interfaces between semiconductor and ferromagnetic materials provide spin filters. The spin filters may be used to inject strongly spin polarized currents into a semiconductor for use in spintronic devices. Some suitable combinations of ferromagnetic metal and semiconductor include hcp Co or fcc Ni or fcc Co (ferromagnetic metals) interfaced to GaSb, InAs, ZnTe, CdSe or GaAs or InP or Ge or BN or semiconductor alloys that include any of these (semiconductors).

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GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 01/00944

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H01L29/82

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>FIEDERLING R ET AL: "INJECTION AND DETECTION OF A SPIN-POLARIZED CURRENT IN A LIGHT-EMITTING DIODE" NATURE, MACMILLAN JOURNALS LTD. LONDON, GB, vol. 402, no. 6763, 16 December 1999 (1999-12-16), pages 787-790, XP000960957 ISSN: 0028-0836 cited in the application figures 1,2 page 787, column 2, paragraph 2 -page 789, column 1, paragraph 4</p> <p>--- -/-</p>	2,3,8,47

☒ Further documents are listed in the continuation of box C.☐ Patent family members are listed in annex.

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\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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## INTERNATIONAL SEARCH REPORT

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BRUNO P ET AL: "RESONANT TUNNELING SPIN VALVE: A NOVEL MAGNETOELECTRONICS DEVICE" JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 84, no. 2, 15 July 1998 (1998-07-15), pages 978-982, XP000769761 ISSN: 0021-8979 Section II: Discussion of the structure -----	2, 3, 41, 42, 47